Activity #13: Math (Student version)

Comparing Reaction Times in Three Sports

***Note to students*: Lab teams of two or three students are required for this activity.**

softball

baseball

tennis

***Purpose*:** **To compute speed in meaningful way by applying rules of ratios**
To compare reaction times in three different sports
To develop an understanding of the need for math in real-world activities
To practice with the properties of ratio

***Materials*: calculator**

This activity is an adaptation and extension from the *Mathematics Teacher*, March 2002.

***Activity Procedure*:**

1. Investigate the speed of a softball pitch. In the Olympics, a typical pitch can be thrown at 65 mph. Show all work.

a. First, find how fast a softball thrown at that speed will cross home plate in feet per second.

b. Determine how long it will take for the softball to reach home plate, if home plate is 40 feet from the pitcher's mound.

2. Investigate the speed of a baseball pitch. In the Olympics, a typical pitch can be thrown at 90 mph. Show all work.

a. First, find how fast a baseball thrown at that speed will cross home plate in feet per second.

b. Determine how long it will take for the baseball to reach home plate, if home plate is 60.5 feet from the pitcher's mound.

3. Investigate the speed of a tennis ball. In pro tennis, a typical serve can be traveling 105 mph. Show all work.

a. First, find how fast the tennis ball is served in feet per second.

b. Determine how long it will take for the tennis ball to reach the opposite baseline, if the baselines are 78 feet apart.

***Analysis*:**

1. Compare answers. Decide which player must react more quickly to the ball and explain why. _____

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2. Did you expect this result? Why or why not? _____

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Extension:

What sport do you play? Do a similar analysis on that sport, if possible.